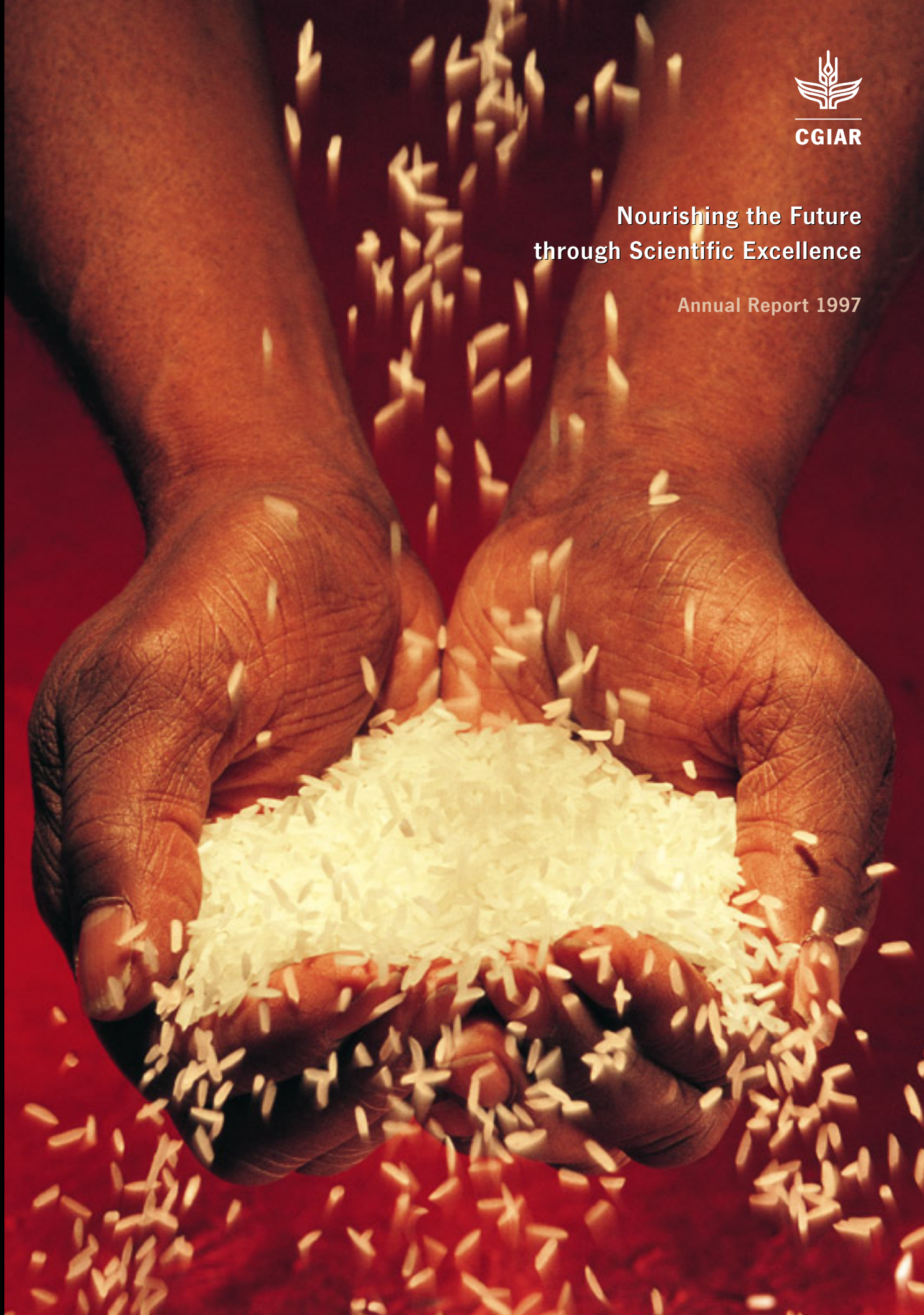
Consultative Group on International Agricultural Research



CGIAR

Nourishing the Future through Scientific Excellence

Annual Report 1997

Contents

CGIAR CENTERS

CIAT: Centro Internacional de Agricultura Tropical (International Center for Tropical Agriculture), Colombia • **CIFOR:** Center for International Forestry Research, Indonesia • **CIMMYT:** Centro Internacional de Mejoramiento de Maiz y Trigo (International Center for the Improvement of Maize and Wheat), Mexico • **CIP:** Centro Internacional de la Papa (International Potato Center), Peru • **ICARDA:** International Center for Agricultural Research in the Dry Areas, Syria • **ICLARM:** International Center for Living Aquatic Resources Management, The Philippines **ICRAF:** International Centre for Research in Agroforestry, Kenya • **ICRISAT:** International Crops Research Institute for the Semi-Arid Tropics, India • **IFPRI:** International Food Policy Research Institute, United States • **IIMI:** International Irrigation Management Institute, Sri Lanka **IITA:** International Institute of Tropical Agriculture, Nigeria • **ILRI:** International Livestock Research Institute, Kenya • **IPGRI:** International Plant Genetic Resources Institute, Italy • **IRRI:** International Rice Research Institute, The Philippines • **ISNAR:** International Service for National Agricultural Research, The Netherlands • **WARDA:** West Africa Rice Development Association, Côte d'Ivoire

Our Mission

Our mission is to contribute, through our research, to promoting sustainable agriculture for food security in developing countries. Throughout the pages of this report runs the theme nourishing the future through scientific excellence, which exemplifies the CGIAR in action.

Chairman's Message

The closely intertwined problems of poverty, hunger, environmental distress, and population increase—problems held at bay by past achievements towards which the CGIAR made crucial contributions—continue to press on us, demanding resolution. Redoubled efforts to develop sustainable agriculture, particularly in the world's poor regions where agriculture is a major occupation, are vital. Confronting this challenge, the particular task of the CGIAR and its partners is to define and implement a research agenda that is innovative, appropriate, and effective. In the period covered by this annual report, the CGIAR examined many aspects of research and research management relevant to this task. Among the issues addressed was a double shift in the agricultural research paradigm.

The first of these shifts requires the integration of crop-specific research, which has been so successful in the past, into a broader, more holistic vision. This amounts to the contextualization of research. Crops research would continue, but stronger links would be forged to ecoregional and sustainability imperatives. Geographically, this approach would emphasize the local or regional ecology. Thematically, it would focus on the combination of livestock, forestry, acquaculture, and farming issues. On the socioeconomic front, it would seek to increase the productivity and profitability of complex farming systems at the smallholder level. The second shift is to emphasize the genetic imperative. This second shift would enable the CGIAR to utilize the most cutting-edge work associated with genetic mapping, molecular markers, and biotechnology to accelerate the breeding process and achieve the promise of all that science can do for the poor and the environment.

Biotechnology—one of many tools of agricultural research and development—could provide many advantages to institutions such as the CGIAR centers that pursue the mission of environmental protection, poverty reduction, and food security centered on the small-holder farmer in developing countries. Although the first fruits of the new technology are already benefiting the commercial crops of industrialized countries, there is no inherent reason why the tools of biotechnology could not be employed in pursuing the mission of environmentally and socially sustainable development.

The biotechnology revolution is here. But for many of us who acknowledge its scientific effectiveness, biotechnology raises important questions relating to ethics, intellectual property rights, and biosafety. These issues need to be scrutinized in the light of reason, not of emotion or prejudice. For it is only through such scrutiny that a productive construct can be fashioned out of the diverse aspects—science, agriculture, law, farmers' rights, the

working of civil society, and more—that impinge upon a truly complex situation.

Meanwhile, important work is currently being carried out by many scientists on genomics, genetic mapping, and the identification of quantitative trait loci (QTLs). Characterization based on screening exotic germplasm for relevant QTLs adds an important dimension to research that the traditional method of phenotype-based screening might miss. Genetic linkage maps based on molecular markers have made it possible for QTLs to be identified, studied, and applied in crop breeding. By locating the appropriate QTLs in the wild relatives of major crop species and using these in plant breeding, it should be possible to make major advances on the yield front.

This line of thinking argues for the expansion of our efforts at genetic rather than phenotypical screening and characterization of our germplasm, based on the relevance of the traits for particular agronomic characteristics. It is also notable that work of this type would benefit from crossing the traditional commodity specific lines. Indeed, we are discovering that the architecture of the genomes for monocots has much in common across species, an observation that also holds for dicots such as tomatoes and potatoes.

Thus, not only is there some possible benefit from working on these issues across centers, we may also reach a critical mass of CGIAR staff working on the same problems who could function as a group, possibly located within advanced research organizations (AROs) that have specialized expertise. That would open up new ways in which we can combine resources across centers and associate them with AROs in innovative partnerships. Over time, the CGIAR scientists could be supplemented with NARS scientists and, in fact, include postdoctoral trainees from around the developing world. These arrangements would serve to build bridges across the global agricultural research system, strengthen the networking of scientists, and help associate some of the best AROs more closely with research that will help to solve the problems of developing countries.

Such approaches could transform the international agricultural research system, radically. The CGIAR would strengthen its role as facilitator and enabler of more open access for the South, while remaining involved with the best science everywhere in the world. Reality would grow around the rhetoric of partnerships and collaboration, as we enter the age of the knowledge-based society. This would be another step in the direction of harnessing science to the cause of the poor and the environment.

Biotechnology could be a useful tool to the CGIAR centers as they pursue food security, poverty reduction, and environmental protection.

Implementing these ideas is a challenge that calls for a special effort within and beyond the CGIAR.

— ISMAIL SERAGELDIN

Executive Secretary's Message

This year's annual report chronicles an exciting, productive, and challenging time at the CGIAR. Mobilizing the best of science to nourish a sustainable future is a recurring theme throughout these pages. Nowhere is the CGIAR's unique contribution better illustrated than in its work to serve the poorest people in the world. We are especially proud that the CGIAR's work continues to offer solutions and strategies to face critical issues that will shape the next century—biodiversity, food security, and global policy issues.

The strength of the CGIAR derives from the unified and diverse efforts of its international network of centers and its collaborations with partners around the world. During 1997, the CGIAR achieved important results in the areas of membership, research, finance, impact assessment, and evaluation.

Membership and Partnership The CGIAR expanded its membership and significantly strengthened partnerships with developing countries, nongovernmental organizations (NGOs), and the private sector. Thailand, Peru, New Zealand, and Portugal became CGIAR members during the year. Nineteen developing countries are now members of the CGIAR, bringing their own invaluable perspectives to CGIAR deliberations and ensuring an equitable South-North balance in decisionmaking. All members of the OECD Development Assistance Committee are CGIAR members.

The Global Forum on Agricultural Research, established in 1996, provides an innovative means through which all partners engaged in agricultural research for the benefit of the poor can act together on global priorities. Two coordinating mechanisms of the Forum—the Global Forum Steering Committee and the NARS Steering Committee—became fully operational in 1997. The Forum developed a plan of action for 1998–2000 and established a support group.

The NGO and Private Sector Committees contributed substantially to the CGIAR's dialogue on a number of important issues in 1997, particularly biotechnology. The committees helped the CGIAR have a better understanding of and cooperation with key partners through a range of activities based on common interests and unifying goals.

Research Throughout the year the CGIAR reaffirmed its commitment to its key areas of focus—the generation of international public goods through conserving germplasm, increasing productivity, protecting the environment, improving policy, and building capacity. To better unify our work, the CGIAR conducted strategic medium-term planning activities. The CGIAR approved an overall priorities framework proposed by the Technical

Advisory Committee (TAC) and 1998–2000 plans for each of the sixteen CGIAR centers.

Consensus within the CGIAR began to emerge related to an important and powerful area of research—biotechnology. We examined the CGIAR's involvement in biotechnology research and assessed our current level of effort and investment in this promising and rapidly evolving area of science. We also examined the potential benefits and risks of biotechnology and began efforts to determine the extent to which the CGIAR should expand its use of biotechnology as a means to accelerate research efforts for the benefit of the world's poorest. As part of its extensive deliberations, the CGIAR convened two expert panels—one on general issues in biotechnology and another on proprietary science and technology. Organized and led by TAC, these two panels will report their findings at Mid-Term Meeting 1998, when the CGIAR will continue its deliberations on biotechnology.

Finance Funding for the CGIAR's research continued to grow in 1997, following an upward trend in recent years. In 1996, funding was $304 million and in 1997, $320 million. This is both noteworthy and encouraging in light of the significant declines in official development assistance (ODA) over the same period. Nonetheless, some individual centers faced shortfalls in 1997 and required special intervention by the CGIAR.

Impact Assessment Throughout 1997 the CGIAR focused greater attention on assessing its impact. We made progress in fostering an evaluation culture, harmonizing evaluation practices, developing common methodologies, and generating data and information through targeted impact assessments. As a part of this effort, the Impact Assessment Evaluation Group (IAEG) presented its first report on impact to the CGIAR's members in 1997. In addition, centers presented their own individual statements of impact and impact assessment work.

Evaluation During 1997, the CGIAR launched its third system-wide review. The review focused on how the CGIAR should position itself within the global agricultural research system in the future, the areas of research on which the CGIAR should concentrate, the structure and governance mechanisms needed to advance the CGIAR's mandate into the next millennium, and the partnerships that will be critical to the CGIAR's future success. The review panel engaged in open dialogue and interacted closely with CGIAR members, centers, partners, and other interested parties. The review panel will present its findings at International Centers' Week 1998.

The CGIAR has expanded developing country membership, ensuring an equitable South-North balance in decisionmaking.

In addition to the ongoing system review, external program and management reviews of ICRISAT, IPGRI and ISNAR were completed in 1997. External reviews are valuable for evaluating a center's performance, providing feedback for the center's and the CGIAR's consideration.

The momentum of the results and progress the CGIAR achieved in 1997 will both strengthen our efforts in 1998 and unify us as a global coalition of partners well prepared to meet the challenges of the new millennium.

— ALEXANDER VON DER OSTEN


Scientific excellence to sustain our future.

the CGIAR

In the wake of concerns in the 1960s and early 1970s that rising populations in developing countries were outstripping the world's capacity to provide food, leaders from private foundations, international organizations, and national governments saw the need for an international agricultural research system to help combat hunger in the developing world.

The Consultative Group on International Agricultural Research (CGIAR) was founded in 1971 as a global endeavor of cooperation and goodwill. The CGIAR's mission is to contribute, through its research, to promoting sustainable agriculture for food security in developing countries.

Today, the CGIAR works to help ensure food security for the twenty-first century through its network of 16 international and autonomous research centers. Together, the centers conduct research on crops, livestock, fisheries, and forests, develop policy initiatives, strengthen national agricultural organizations, and promote sustainable resource management practices that help provide people worldwide with better livelihoods.

The CGIAR centers are not only recognized for scientific excellence, they develop real products and practical methods for use on the ground. Their work focuses on all aspects of food production, from producing higher yielding crop varieties to understanding the world's diverse growing conditions to developing improved farming practices.

Individual CGIAR centers devote their efforts to improving cereal, legume, root, and tuber crops, as well as livestock and fish varieties. They focus on increasing food production practices in dry, semi-arid, desert, tropical, and high altitude regions, where farmers must routinely struggle against the harshest of conditions with few resources. The CGIAR's experts continually develop practices and policies to improve agroforestry, forestry, and irrigation management.

Most of the CGIAR centers are located in developing countries and, collectively, they employ over 1,000 internationally recruited and about

8,000 nationally recruited staff. They work in collaboration with advanced research institutions, national agricultural research systems, nongovernmental organizations, community groups, and the private sector.

Creating International Solutions

Ensuring the world's food security requires research. In all its research endeavors, the CGIAR cuts across national borders to create international solutions. The CGIAR plays a major role in helping developing regions by providing a technological and policy base for improving agricultural and other food crop productivity and natural resources management.

This is vital because agricultural growth and development in low-income countries (1) provide jobs and income in rural areas, where the majority of the poor live; (2) help meet growing food needs that are driven by population growth and urbanization; (3) stimulate overall economic growth; and (4) help conserve natural resources.

The CGIAR's innovative research has strengthened global food security and helped farmers meet the day-to-day challenges of keeping their environment healthy and their farming sustainable. The CGIAR focuses on five major research thrusts.

Improving Productivity The CGIAR strives to make agriculture more productive in developing countries through genetic improvements in plants, livestock, fish, and trees, and through better management practices.

Protecting the Environment An essential part of the CGIAR's efforts is to conserve natural resources, especially soil and water, and reduce any negative effects that agriculture has on the surrounding environment.

Saving Biodiversity The CGIAR holds in trust one of the world's largest collections of *ex situ* genetic resources.

Improving Policy Public policy heavily influences agricultural producers. The CGIAR's policy research aims to help streamline and improve policies that influence the spread of new technologies and the management and use of natural resources.

Strengthening National Programs To strengthen national agricultural research in developing countries, the CGIAR fosters working relationships with colleagues in national programs, provides training programs for research staff, and helps to improve skills in research administration and management.

Ensuring Food Security for the Twenty-first Century

For developing nations, food security, poverty alleviation, and natural resource management will be some of the greatest challenges in the years ahead. Establishing sustainable food production and natural resource management will go far to meet these challenges that call for the work of the CGIAR.

The CGIAR works to help ensure food security for the twenty-first century through its network of sixteen international and autonomous research centers. Recognized for scientific excellence, they develop real products and practical methods for use on the ground.

The CGIAR lies at the heart of an international system linking developing and developed nations. For the CGIAR, facilitating South-North dialogue is a key objective. Although the CGIAR is an international public research effort in and for developing countries, the CGIAR's research reaches a wider audience. Worldwide, countries benefit from the CGIAR's activities to promote greater food security and stronger economies.

The Food and Agriculture Organization of the United Nations, the United Nations Development Programme, the United Nations Environment Programme, and the World Bank jointly sponsor the CGIAR. The 57 members that support the CGIAR include developing and developed countries, private foundations, and international and regional organizations. All 22 members of the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee belong to the CGIAR, contributing some 75 percent of the CGIAR's research funds.

Participation by developing countries has doubled in recent years, and 19 developing countries are CGIAR members today. Ismail Serageldin, Vice President, Special Programs at the World Bank, serves as the CGIAR Chairman.

Milestones

1970 **Norman Borlaug (CIMMYT)** receives the **Nobel Peace Prize** for his scientific breakthroughs.

Borlaug

1987 **Henry M. Beachell and Gurdev S. Khush (IRRI)** receive the **Japan Prize**.

M.S. Swaminathan (IRRI) receives the **Golden Heart Presidential award** from Philippine President Corazon Aquino.

John Mellor (IFPRI) receives the **U.S. Presidential End Hunger Award**.

M.S. Swaminathan (IRRI) receives the **World Food Prize**.

Swaminathan

Herren

1991 **Leslie Swindale (ICRISAT)** receives the **Padma Bhushan Award** from the President of India.

1995 **Hans Herren (IITA)** receives the **World Food Prize**.

1996 **Henry M. Beachell and Gurdev S. Khush (IRRI)** receive the **World Food Prize**.

This timeline represents a sample of major awards from external sources received by CGIAR scientists. It is not intended to be a comprehensive list.

1980 The CGIAR receives the **King Baudouin International Development Prize**.

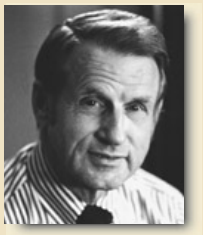
1985 **M.S. Swaminathan (IRRI)** receives the **Association for Women in Development Award**.

1986 **Amir U. Khan (IRRI)** receives the **International Inventors Award** from Sweden's King Carl Gustav.

1988 **Thomas Odhiambo** (Technical Advisory Committee) receives the first **Africa Prize for Leadership for the Sustainable End of Hunger**.

Robert F. Chandler, Jr. (IRRI) receives the **World Food Prize**.

Rattan Lal (IITA) receives the **International Soil Science Award** from the Soil Science Society of America.



Chandler

1990 **John Niederhauser (CIP)** receives the **World Food Prize**.

Niederhauser

1993 **Carlos Ochoa (CIP)** receives the **Inter-American Science Prize** from the Organization of American States.

Pedro Sanchez (ICRAF) receives the **International Service in Agronomy Award** from the American Society of Agronomy and the **International Soil Science Award** from the Soil Science Society of America.

1994 **Fredson Chikafumbwa (ICLARM)** receives the **International Foundation for Science/King Baudouin Award**.

Donald Winkelmann (CIMMYT) receives Mexico's **Order of the Aztec Eagle**.

Beachell

Khush

1997 **Jerry Vanclay (CIFOR)** receives the **Queen's Award for Forestry,** given by the Secretary General of the Commonwealth.

John Ryan (ICARDA) receives the **International Soil Science Award** from the Soil Science Society of America.


Protecting our natural heritage.

Biodiversity

Biodiversity conservation and sustainable agriculture—the two are so intertwined that to ignore how one affects the other is to tell only part of the story. When uncultivated natural habitats are plowed under or fall to the ax, agriculture can threaten biodiversity conservation. Yet, agriculture can be key to biodiversity surviving. Certain agricultural practices and land-use systems enhance biodiversity. And protecting the world's biological riches is essential to raising and sustaining agricultural yields.

The CGIAR recognizes the close, interconnected relationship between agriculture and biodiversity. Its scientific research and policy work rigorously address the many dimensions of biodiversity conservation. With its commitment to scientific excellence, the CGIAR uses its extensive resources to help preserve biological diversity through its agricultural, forestry, and aquaculture projects. The CGIAR knows that conserving biodiversity is vital for the world's future.

Acting on its strong commitment to conserving biodiversity, the CGIAR has participated in key global fora relating to biodiversity, including the following:

- The Conference of the Parties to the Convention on Biological Diversity,
- The FAO Commission on Genetic Resources for Food and Agriculture,
- The World Food Summit, and
- The FAO International Technical Conference on Plant Genetic Resources.

Biodiversity and Agriculture

Conserving genetic diversity is essential for sustaining agriculture, which relies on genetic diversity to keep crops healthy and productive. Researchers often breed cultivated species with wild ancestors or relatives of the cultivated plants to develop new varieties that can adapt to adverse or changing conditions. Farmers minimize crop failure by planting several

varieties in the same area. The danger of genetic uniformity is that crops are much more susceptible to new pests and stresses.

Today, genetic diversity is under relentless attack. Desertification, deforestation, erosion, and land conversion are destroying areas rich in plant species. It may be very difficult to increase world food production in the next century without these species.

The CGIAR believes that maintaining this diversity is essential for global food security and has focused much of its efforts on protecting and enhancing this critical resource for the future. The CGIAR's scientists who work on food crop research rely on variation in the genetic make-up of primitive and wild plants to produce better-adapted and higher-yielding varieties that are disease and pest resistant.

Conserving genetic resources is important for farmers to produce grains, like these in this Cairo market.

Preserving Genetic Resources

For more than 25 years, the CGIAR centers have assembled their collections of genetic resources from donations from other gene banks, collaborative collecting expeditions with national programs, breeders around the world, and within the centers themselves. Currently, the CGIAR maintains the world's largest international *ex situ* collection of plant genetic resources. More than half a million samples of crop, forage, and tree species are preserved in the gene banks of the CGIAR centers. The species held by the centers include landraces, wild species, advanced and old cultivars, and breeding lines. These collections provide important global resources. For example, CIP maintains the largest gene bank of potato and sweet potato resources in the world. In addition to plant species, CGIAR holds an extensive collection of fish genetic resources for research purposes at ICLARM.

To ensure optimum conservation and use of these genetic resources, the centers have developed computerized databases that contain records for each sample, including its identity, origin, morphological and other characteristics, storage needs, and distribution patterns. The CGIAR originally focused its preservation activities exclusively on *ex situ* conservation (preserving seeds by storing them in a seed bank). Today, the CGIAR also recognizes the importance of *in situ* conservation, by which a plant remains and is preserved in its original habitat.

In 1994, the CGIAR centers placed their collections of plant genetic resources with the inter-governmental authority of the Food and Agricultural Organization of the United Nations (FAO). Under the terms of the agreements signed with FAO, the

Conserving genetic diversity is essential for sustaining agriculture, which relies on genetic diversity to keep crops healthy and productive.

As part of a CGIAR training course, technicians from national agricultural research systems learn about production systems in a demonstration field.

materials are maintained according to international technical standards and made available worldwide without restriction for research, breeding, or conservation. The CGIAR continues to reaffirm its strong and unequivocal support for the FAO and CGIAR agreements and the free access to genetic resources that they protect.

In addition to maintaining its existing collection, the CGIAR works actively to replenish worldwide genetic diversity conservation. The CGIAR supports the planned and targeted collecting of rare species. For example, IRRI's five-year initiative helps national programs safeguard the genetic diversity of rice. In 1997, the project was active in Bangladesh, Mozambique, Myanmar, Nepal, the Philippines, and Vietnam.

The CGIAR also assists farmers in disaster–hit situations by providing them with crop genetic resources to restore agriculture and rebuild their livelihoods. In 1997, IPGRI, in cooperation with Cooperazione Italiana Nord-Sud and the Somalia Office of the European Union, helped farmers in Somalia to recover their crop genetic diversity in order to restore agricultural production systems devastated by civil strife.

Preventing Agricultural Encroachment

Fragile ecosystems, such as tropical forests, are often destroyed when farmers cultivate the land. Alternative schemes that provide farmers with other means of increasing production can help prevent farmers from encroaching on natural areas. Pearl millet offers an example of such a scheme and how its success may go far in protecting the Amazon rain forest.

In the Brazilian savannas, farmers use pearl millet as a cover crop-cum-mulch for no-till soybean production, an important cash crop. The use of pearl millet increases productivity, reduces energy inputs, and improves the sustainability of no-till soybeans. This, in turn, reduces pressures to cultivate fragile ecosystems, such as the humid forests of the Amazon basin.

Last year, farmers in Brazil sowed over 1 million hectares of pearl

Nurturing the Coral Reef

The naming of 1998 as the International Year of the Ocean, following the designation of 1997 as the International Year of the Reef, is a wake-up call to all of us that urgent and effective action to nurture the seas and all they contain is needed now.

The influence of the oceans on human life is pervasive. Oceans cover some 70 percent of the earth's surface, provide us with food, pharmaceuticals, and minerals, and serve as a sink for atmospheric carbon. Millions of people, particularly in poor countries with large coastal populations, look to the sea for sustenance. Fish is the primary source of protein for about one billion people. Beyond that immediacy, the oceans affect us all—whether we live in coastal areas, benefit from products of the oceans, are enthralled by their beauty, or are affected by their impact on weather patterns. Yet, we have treated this precious component of our patrimony with heedless disrespect. Consequently, the world's marine systems are under serious threat from physical damage, over-exploitation, and pollution.

Consider this brief, but indicative, summary of facts: overfishing has eliminated some species and placed others on the endangered list; human depredations have destroyed or damaged coral reefs—the underwater equivalent of the rain forest—in some 93 of the 109 countries endowed with reefs; soils that have been exposed to rain by rapacious logging and careless farming on hillsides wash silt into the seas; mangrove forests are dying or disappearing; industrial effluents and agricultural runoff poison the seas and their resources; marine biodiversity is imperiled; and increasing urbanization increases pressure on marine environments, inhibiting natural regenerative capacity.

Responding to these assaults on the marine environment and its resources that are vital components of the world's life support systems, over 1600 scientists signed a declaration earlier this year. "Troubled Waters: A Call for Action" challenged "the world's citizens and governments to take decisive action . . .

to stop further severe, irreversible damage to the sea's biological diversity and integrity."

We of the CGIAR know the problem. ICLARM has taken decisive steps in making its contribution towards the global efforts needed to protect and regenerate aquatic resources. The bulk of ICLARM's research is designed to provide effective and affordable inputs for small-scale producers (e.g., integrated aquaculture and agriculture activities) and more affordable products (e.g., improved tilapia) for the consumer. Modern information technology has been harnessed toward this end through the creation of databases, CD-ROMs, and information networks.

We applaud ICLARM and its partners for their efforts. But that is not enough. Our concerns for ecosystems should pay special attention to coastal zones. Our work on agricultural practices should take into account runoff into the seas. Our analysis of water issues, where IIMI is making major contributions, should be linked to the impacts on the deltas and the seas. In this fashion, so many of us in the CGIAR system have a contribution to make, from our regular work programs, to helping humanity deal better with this important issue. Ultimately, in our help to the poor and the destitute, and the agricultural practices they use, we can continue to make a difference.

—ISMAIL SERAGELDIN

Preserving coral reefs is a critical part of the CGIAR's commitment to biodiversity conservation.

A black-naped oriole perches on a tree branch in an Indonesian forest.

millet. To assist Brazil farmers, ICRISAT provided the Brazilian Agricultural Research Corporation (BARC) with information on pearl millet genetic resources, breeding, seed production, and agronomy. Through its work with BARC on pearl millet, the CGIAR is contributing to conserving biodiversity in one of the most species-rich regions of the world.

The CGIAR also preserves areas by introducing new crop varieties that farmers can adapt to their own growing conditions and that increase productivity without expanding cultivated areas. These varieties have saved 300 million hectares worldwide an area as big as Brazil, Canada, and the United States combined.

The challenges of conserving tropical forests can only be solved through international cooperation in research and management.

Biodiversity Conservation and Tropical Forests

Tropical forests are home to a wealth of animal and plant life, housing more than 50 percent of the world s terrestrial biological diversity. Although the world s future rests in preserving these forests and their biodiversity, conserving these resources is one of the most formidable tasks the world faces.

The challenges of conserving tropical forests can only be solved through international cooperation in research and management. CIFOR s work re ects the CGIAR semphasis on the multidisciplinary research needed to tackle the complex problems of tropical forests. In 1997, the Indonesian Ministry of Forestry and the International Tropical Timber Organization signed a groundbreaking agreement that allows CIFOR to research the Bulungan model forest located in East Kalimantan, Indonesia. The Indonesian Ministry of Forestry has designated that CIFOR may develop 321,000 hectares of forest as a model of exemplary research-based management. The project s objective is to achieve long-term forest management for multiple uses, integrating social and silvicultural aspects. Developing a successful model for application in other regions could go far in sustaining the biodiversity and economic resources of tropical forests worldwide.

Finding Alternatives to Burning Forests

In 1997, the world watched in alarm as Southeast Asian tropical forests, which are rich in biodiversity, went up in smoke. According to an Indonesian environmental group, the fires caused millions of US dollars worth of damages and exposed 20 million Indonesians and neighboring citizens to severe health hazards. Worldwide, concern focused on how to prevent such catastrophes from happening in the future.

The Alternatives to Slash and Burn (ASB) Program, a CGIAR system-wide initiative, responded immediately to this concern. After studying the problem, ASB reported that unless land clearing policies and logging practices changed, the Asian fires would likely worsen.

"Smoke is just a temporary problem," explained a senior member of ASB. "The issue is long-term land degradation." The ASB report recommended re-examining Indonesian forest polices, allowing less government land clearing permits during El Niño years, and conducting more research on no-burn, land clearing techniques.

Led by ICRAF the ASB Program has become a worldwide research and development project to reduce tropical deforestation and promote the rehabilitation of degraded land. The Program has identified five "best-bet" alternatives for farmers who practice slash-and-burn agriculture: complex multistrata agroforests, simple agroforests, improved fallows, agropastoral systems, and natural forest management. The Programme aims to develop local solutions to slash-and-burn problems by developing and distributing these scientifically sound, best-bet alternatives.

Since its conception in 1992, ASB has developed into a multi-institutional research consortium of 9 international research centers, 62 national research institutes, universities, and governmental and non-governmental organizations. Originally based in three benchmark sites in Brazil, Indonesia, and Cameroon, the Program has expanded to five more countries—Peru, Thailand, Philippines, Mexico, and Vietnam.

Protected areas alone can not adequately conserve the world's biodiversity. Through the ASB Program, CIFOR's work in the Bulungan forest of Indonesia, and other programs, the CGIAR is vigorously investigating how societies can use the forest, often for a variety of purposes, and conserve biodiversity.

The Indonesian forest fires of 1997 destroyed precious biological resources.


Science for a hungry world.

Food Security

Through its agricultural research, the CGIAR supports the goals of the World Food Summit. Because over 70 percent of people in developing countries depend on the land for their livelihood, improving agriculture can be the trigger that helps populations cope with interconnecting problems of poverty, hunger, and environmental degradation.

Global food security may be society's largest challenge as we approach the 21st century. Although food is relatively plentiful, more than 800 million people—one in five people in the developing world—still go hungry because they cannot produce or afford to buy the food that they and their families need to lead healthy and productive lives.

To focus world attention on the critical importance of global food security, the Food and Agricultural Organization of the United Nations (FAO) convened the World Food Summit in November 1996. Under FAO leadership, officials from 186 countries pledged "to reduce the number of undernourished people to half their present level by 2015." They also urged that efforts be made to "strengthen international agricultural research systems, in particular the CGIAR."

A key success of the Food Summit, writes Gordon Conway in *The Doubly Green Revolution*, is that it moved world leaders to acknowledge the complex and multi-faceted character of global food security—the *raison d'être* of the CGIAR and its research agenda. Indeed, CGIAR activities work on many fronts to bring about agricultural transformation in the world's poor and deprived regions. Conway notes that many of the statements in the World Food Summit's Declaration and Plan of Action are based on the CGIAR's 1994 Vision Statement—*Sustainable Agriculture for a Food Secure World*—and reflect the mission and goals of the CGIAR.

Mobilizing the Best of Science for Global Food Security

Since its inception in 1971, the CGIAR's research has focused on achieving global food security based upon the twin pillars of increased productivity and the sustainable management of natural resources. The results of the CGIAR's research programs are "public goods" that are accessible to all.

Over the past 25 years, the research of the CGIAR centers has developed new technologies to: increase food production in developing countries; protect the natural resources on which future agricultural production must depend; raise the nutritional value of basic food crops and livestock; enable higher caloric diets; bring down food prices; reduce health risks from pesticides; preserve the earth's biodiversity for future generations.

Research at the CGIAR centers has contributed to improving food crops and cropping systems that provide the bulk of the caloric and protein requirements for people in the world's developing countries. Other important areas of the CGIAR's research focus on livestock, forestry, agroforestry, aquatic resources, as well as water management, food policy, and service to national agricultural research systems in developing countries. Each of the CGIAR's research areas work toward meeting future world food requirements and protecting the natural resource base upon which future food production depends. The following examples highlight CGIAR's contributions.

Working to Develop a Striga-Resistant Maize Plant In Sub-Saharan Africa increased demands for food production have intensified land use and made crops more vulnerable to striga. This parasitic weed attaches to the roots of maize and other cereal crops, sapping nutrients and poisoning the plants with a potent phytotoxin. Striga causes annual losses in excess of US$7 billion. Scientists at CIMMYT and IITA are developing high-yielding, striga-resistant maize plants and hybrids through the latest biotechnology tools, including marker-assisted selection.

Developing a Hardier Strain of Tilapia In Asia, home to two-thirds of the world's undernourished people, an improved strain of tilapia—a freshwater fish often known as the "aquatic chicken"—has provided a way to involve more poor people in aquaculture production and make fish more affordable for them. ICLARM and its partners developed a new farmed strain of tilapia that grows 60 percent faster, has a better survival rate, and can yield three fish crops per year, rather than just two. As a result of ICLARM's research,

Striga seedlings attach themselves to the roots of a maize plant.

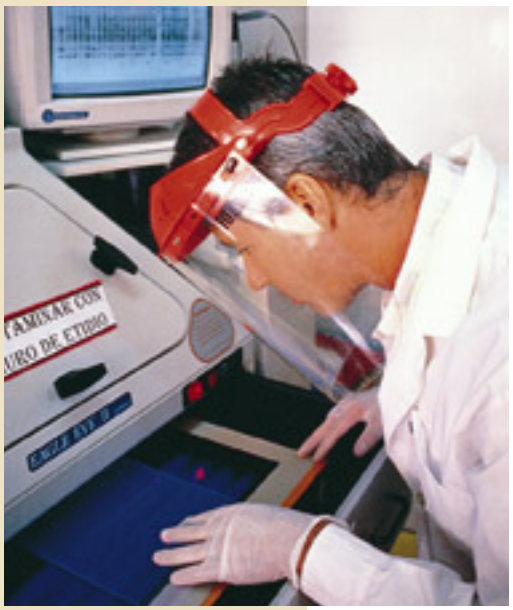
tilapia farming in Asia has both increased and contributed to a rise in overall Asian fish production for the first time in 5 years.

Increasing Land Conservation Through Improved Wheat Varieties

Over 80 percent of commercial spring bread wheat varieties used by national programs in developing countries were developed by CIMMYT or had a CIMMYT-developed parent. Because they require less land for cultivation, these modern, more productive wheats help sustain the natural resource base by conserving land and reducing the pressure to farm marginal, and often more fragile, environments.

Research at the CGIAR centers has contributed to improving food crops and cropping systems that provide the bulk of the caloric and protein requirements for people in developing countries.

A CGIAR scientist uses electrophoresis to study genetic variability in potatoes.



Leading Efforts to Eliminate Late Blight

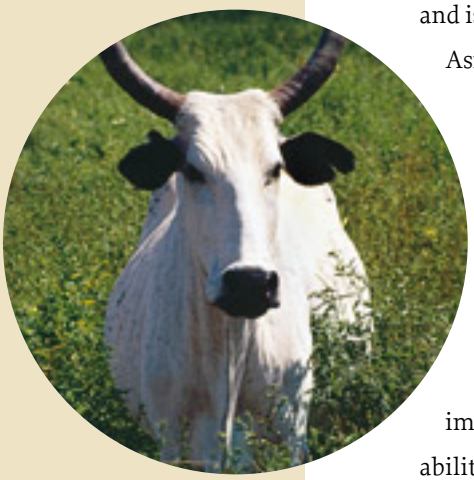
Late blight, the same disease that triggered the Irish potato famine of the 1840s, threatens potato farmers of the developing and developed world. The problem could have disastrous effects because developing country farmers have increased their share of world potato production from 10 percent to roughly one-third. Today, developing countries spend US$100 million per year on efforts to chemically control late blight—a figure that does not include environmental and health costs. Fungicides used to control late blight are not only potentially hazardous and expensive—their effectiveness in controlling the disease is waning. CIP is leading an international search to develop potato cultivars that are both resistant to all variants of the fungus and are appropriate for use in integrated disease management programs. The CGIAR's Global Initiative on Late Blight, a ten-year, $25 million effort, brings together national agricultural research programs and industrialized-country institutions to wipe out late blight and sustain potato production increases into the twenty-first century.

Reducing Animal Trypanosomiasis

Livestock is an important part of many smallholder farming systems in tropical countries, providing meat and milk, power for land cultivation, and manure for improving soil fertility. ILRI in collaboration with the International Center of

Insect Physiology and Ecology (ICIPE) is working to improve the control of animal trypanosomiasis and protect important livestock production for Africa. Transmitted by the tsetse fly, trypanosomiasis, known as "sleeping sickness" in humans or "nagana" in cattle, threatens both animal and human health in an area of Africa roughly equal to the continental United States. The disease costs African farmers an estimated US$5 billion a year in lost livestock production and is now spreading to areas of Asia and Latin America.

African farmers have already benefited from disease control methods of the ILRI-ICIPE project. Household income in the project's study sites has increased by 20 percent and nutrition has improved due to the greater availability of milk, meat, and higher crop yields. Best of all, the project's trypanosomiasis activities and research show relatively few negative impacts on the environment.



The CGIAR collaborates with research partners to keep livestock, like these white Fulani cattle, healthy.

Strengthening the CGIAR's Partnerships

One of the CGIAR's strengths is its close, long-standing relationships with research partners throughout the developing world. In 1997, the CGIAR escalated its efforts to facilitate partnerships essential to the development of global food security.

One of the CGIAR's strengths is its close, long-standing relationships with international and national research partners throughout the world.

At the national level, the CGIAR expanded work with national agricultural research systems and nongovernmental organizations to devise policies, conduct research, and ensure that research results quickly move from laboratories to farmers' fields. WARDA, for example, has helped to improve the productivity of rice production systems, including farmer participation in the varietal development process. ISNAR has helped Indonesian research leaders develop strategic planning guidelines for the country's 17 new agricultural technology assessment institutes.

At the regional level, the CGIAR supported the growth of regional federations of agricultural research institutions and fora, such as the following: Asia Pacific Association of Agricultural Research Institutions; Association of Agricultural Research

The CGIAR works to ensure that its research products are relevant to people in local communities, including this baker in Bangladesh.

Institutions in the Near East and North Africa; Forum on Agricultural Research in Africa, and Latin America and Caribbean Forum on Agricultural Research.

Wherever possible, the CGIAR encouraged and facilitated productive interaction of such organizations to facilitate the exchange of information, goal setting, and cooperative projects. In Central America, ISNAR supported efforts to establish a new regional entity for agricultural research, the Central American System for Agricultural Technology (SICTA).

At the systemwide level, the CGIAR has made constituency and consensus building its priorities. CGIAR committees representing societal and corporate perspectives work together to ensure that the experience, expertise, and perspectives of all interests are fully engaged in decisionmaking on food security and related issues. The CGIAR also continues to participate in outreach efforts with intergovernmental bodies and other institutions to help advance food security goals and interests supported by the World Food Summit.

At the global level, the CGIAR serves as a catalyst to establish the goals and programs of the *Global Forum on Agricultural Research.* The 1998–2000 Plan of Action of the *Global Forum* provides the basis for new research partnerships to strengthen the capacity of the agricultural research community to combat poverty, hunger, environmental degradation, and economic inequity in developing countries. The CGIAR works to explore, establish, and implement collaborative programs for sustainable food security among all members of an emerging global agricultural research system, including the following: NGOs, farmers' organizations, the private sector, local and national governments, national research systems, advanced research organizations, and international agricultural research centers.

In partnership with these groups, the CGIAR shows its commitment and support of the World Food Summit's objectives and the shared goal of reducing hunger through improved food production practices.


Making a difference, for today and tomorrow.

Global Policy

Over the next quarter century, analysts predict that the world's population will grow by an unprecedented 90 million people—the equivalent of Mexico's population in 1995—per year. The pressing need to increase agricultural production and the resulting strain on the environment will pose an enormous task for even the most resourceful leaders. Favorable policy conditions lie at the core of alleviating poverty and sustainably managing natural resources. Without appropriate policies, simply improving the technology of agricultural production and natural resources management will not translate into adequate food supplies, improved nutrition, and the conservation of natural resources.

Policy research is an integral part of the CGIAR's mission. Through its research and outreach activities, the CGIAR promotes policies to reduce poverty, improve food security and nutrition, and alleviate pressures on fragile natural resources. Taken together these activities create a formidable matrix for advancing sustainable development.

To achieve sustainable agriculture one has to look at the immediate needs of farmers and the longer needs of society. It requires a broad analysis of people and the environment. This is the CGIAR's approach to policy issues.

When farmers use excess pesticides, cultivate on hillsides vulnerable to erosion, or chop down trees in tropical forests, they do so because they think these are the only ways they can feed their families or improve their situations. Only by conducting detailed analyses of such situations can sustainable measures become common practice, replacing damaging, stopgap measures.

The CGIAR researchers examine the social and economic factors that determine how farmers and communities manage natural resources, along with considering how various reforms and situations can affect their behavior. On the broader level, CGIAR researchers examine trade and other

Contour hedge rows are used to control soil erosion in Philippine farmlands.

The CGIAR promotes policies to reduce poverty, improve food security and nutrition, and alleviate pressures on fragile natural resources.

macroeconomic policies—such as exchange, interest, and wage rates—to determine their effects on development and the environment.

The CGIAR communicates its policy research directly to the audience that can make a difference—national and international policymakers, food program administrators, analysts, scientists, and the general public. For example, CIAT developed a set of environmental indicators to help policymakers with decisions about sustainable development. The CGIAR's outreach flows in both directions. The CGIAR both communicates its findings to and receives information and ideas from developing-country partners. These dialogues between the CGIAR centers and its partners facilitate the adoption of better agricultural and natural resources policies.

Using teams of international policy analysts, the CGIAR collects data, tracks the latest policy developments, creates analytical tools, and produces research results to help developing-country officials make better-informed policy decisions. For example, in Pakistan and Bangladesh policymakers used the results of IFPRI research to change policies related to ration shops, food subsidies, credit programs, and other food related policies. This resulted in a savings of $200 million in fiscal costs, which was used to set up a food-for-education program for children from low-income households.

Pooling CGIAR Expertise

Collaboration is the basis of the CGIAR's policy research—multidisciplinary teams combine economic analysis with expertise in agricultural, geography, political science, anthropology, sociology, and ecology. To take the fullest advantage of the system's vast resources and expertise, the CGIAR has established system-wide initiatives. These initiatives address the vital issues of agriculture and natural resource management. The following demonstrates CGIAR's policy work and system-wide initiatives.

Preparing for the Future

Troubled by the global challenge of balancing the world's food needs with protecting the environment, IFPRI launched a 2020 Vision for Food, Agriculture, and the Environment. A trailblazing effort in international policy, the 2020 Vision aims to develop a vision and an action plan for eradicating hunger and malnutrition by the year 2020 while protecting the environment. The program seeks to generate information and encourage debate to influence national governments, nongovernmental organizations, the private sector, and international development institutions to take action to make the 2020 Vision a reality.

In January of 1997, the program initiated its Phase II, which emphasizes helping developing countries design and implement their own 2020 strategies and action plans. The new phase takes the 2020 initiative to the regional and subregional level.

Since its launch, the project leaders and staff have held briefings, presentations, and conferences in more than 40 developing and developed countries. The project has produced a bounty of publications and materials: 47 policy briefs, 23 discussion papers, 10 booklets, 4 major synthesis papers, several videos, a poster, and a newsletter. Demand for the project's publications has been extraordinary. Media coverage and the ongoing request for presentations from around the world have also shown how critically important the project's vision has become. Indeed, more than 300 newspaper and magazine articles have covered the 2020 Vision.

"The challenges loom large, but visionary leaders have the opportunity and the means to solve the problems," says Yoweri Museveni, President of Uganda and chair of the international advisory committee of the 2020 Vision initiative. "And we in developing countries hope that, through joint efforts such as IFPRI's 2020 initiative, we can forge a better future for the world. We believe that if we work together, we can indeed be partners and not recipients in the development process."

The CGIAR is committed to ensuring future food security, exemplified by this floating Thai market.

Analyzing Property Rights

Although it receives little attention from the press, property rights issues are one of the most important factors determining how people manage natural resources. Who owns and who uses natural resources affects how resources are used, along with having implications for the equity among users. The CGIAR System-wide Program on Property Rights and Collective Action brings together CGIAR centers, national research institutions, and nongovernmental organizations to analyze how institutions related to property rights influence the efficiency, equity, and sustainability of natural resource use. Through its workshops, panels, publications, e-mail network, and literature reviews, the program facilitates the cross-fertilization of ideas and experiences among decisionmakers, policy shapers, and researchers.

In a similar effort, the CGIAR is currently studying how forest and farm land tenure institutions are affecting the pace of deforestation and reforestation in Vietnam, Indonesia, Nepal, Ghana Uganda, and Malawi. Another study is evaluating the effectiveness of existing property rights systems in North Africa and West Asia and their impact on the management of cropland and rangeland. These studies are helping to identify policy interventions that can facilitate and strengthen indigenous property rights institutions, as well as locating conditions under which more formalized land rights institutions are appropriate.

The CGIAR communicates its findings to and receives information and ideas from developing country-partners. These dialogues between the CGIAR centers and its partners facilitate the adoption of better policies.

Managing Water Scarcity

"Since ancient times, people have regarded water as a gift from the gods," said Mark Rosegrant, research fellow at IFPRI and author of the report, *Water Resources in the Twenty-First Century: Challenges and Implications for Action.* "But in many areas now, water scarcity is emerging as the main obstacle to producing enough food to feed people."

Improving water management is a priority to the CGIAR. In Sri Lanka,

Sensible water management is key to sustainable farming.

IIMI developed a program to control malaria through water management. IIMI analysis showed a dramatic decrease in the incidence of malaria in a Sri Lankan village when water policy decisions about an irrigation canal were changed. Through its collaborative research program, On-farm Water Husbandry, ICARDA is introducing water use efficiency techniques in nine countries, including water harvesting and supplemental irrigation.

A CGIAR researcher and community members discuss best practices for sustainable farming.

Because the growing scarcity of fresh water will pose serious problems for future rice production, IRRI is extensively researching rice production systems with higher water use efficiency. IRRI is looking into technologies that reduce water demand for rice production and changes in the rice plant itself and the ways in which it is grown. These changes would produce more efficient use of water and provide economic incentives for farmers to reduce water losses. In collaboration with IIMI, IRRI is looking into management policies for efficient operation of irrigation systems.

The CGIAR is also exploring opportunities to improve water management through a system-wide initiative that seeks to enhance the use of water in agriculture by analyzing a range of water-related policy, institutional, and technical issues. This initiative, led by IIMI, addresses the critical need to increase water productivity, generate methodology to measure water productivity, and build the research capacity for water management in national agricultural research centers and NGOs. In line with these concerns, the CGIAR is examining the effectiveness of water-user associations in managing irrigation water in India and Pakistan, where people routinely face dire water situations. In addition, the CGIAR is developing models for potential solutions, such as using tradable water rights as a way to reduce water logging, salinization, and depletion of aquifers.


Investing in our future.

Operations

Research Agenda Financial Highlights

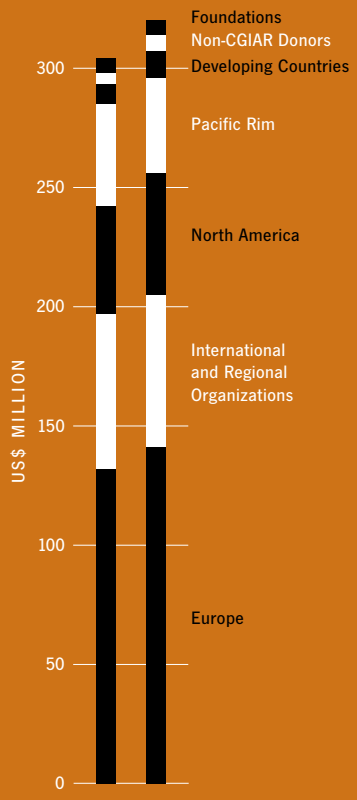
CGIAR members support centers and programs of their choice, and each center directly receives and spends funds. Thus, the CGIAR financial outcome is consolidated from the financial results of the sixteen independent CGIAR centers. Results are reported in U.S. dollars. CGIAR financial highlights for 1993 to 1997 are shown in Table 1 (see page 37). Further details are provided in the CGIAR 1997 Financial Report, a separate publication available from the CGIAR Secretariat.

Contribution Profile

Contributions from members in support of the CGIAR research agenda totaled $320 million in 1997. Fifty members—six more than in 1996, with contributions from Bangladesh, Pakistan, Portugal, South Africa, Thailand, and Nigeria—provided support for the CGIAR research agenda. For analytical purposes, these members can be placed into four distinct groups: industrial countries (20); developing countries (16); foundations (3); and international and regional organizations (11). Industrial countries can be further subdivided along geographical lines into three subgroups: Europe; North America; and the Pacific Rim. Because contributions to the CGIAR are voluntary and each member has the freedom to decide which centers to support and at what level, the trends emerging from any of the groupings should not be interpreted as policy decisions by the group concerned.

As shown in Figure 1, contributions to the agenda in 1997 increased in three of the member groups (Europe, North America and Developing Countries) as well as from non-members. Funding levels from the International and Regional Organizations and the Foundations remained unchanged. However, there was a slight decrease in the contributions from the Pacific Rim group attributed to Japan, which was due mainly to exchange losses incurred at disbursement. The increase in contributions in 1997 reflects

Figure 1. Agenda Contributions, 1996–1997



the special efforts by individual members—Finland, Italy, Norway, and Spain—and the contributions from new members. In addition to first-time contributions by the new developing country members, several other developing country members stepped up their support in 1997. Brazil increased its contribution to $0.5 million, Colombia and Egypt increased their agenda support, and Nigeria became a contributing member again. Through these efforts, contributions from developing countries increased by over 31 percent from 1996, while maintaining their share of the total at 3 percent of agenda support in 1997.

The support provided by the top ten contributors to the CGIAR in 1997 funded about three-quarters of the research agenda, the same proportion as in 1996. Their contributions are illustrated in Figure 2. The United States of America replaced Japan as the largest contributor after the World Bank. Colombia maintained its position as the largest contributor among the developing countries.

Disbursement Schedule

Although the full year disbursement profile was similar to that of the recent past, the 1996 progress towards meeting the disbursement targets set under the stabilization program—50 percent of commitments disbursed in January and the balance by mid-year—stalled in 1997. As was the case in 1996, 39 percent of commitments were disbursed in the first half. During the third quarter the pace of disbursements slipped, because two major contributors (Canada and Japan) disbursed only in the fourth quarter.

Figure 2. Top Ten Agenda Contributors, 1997

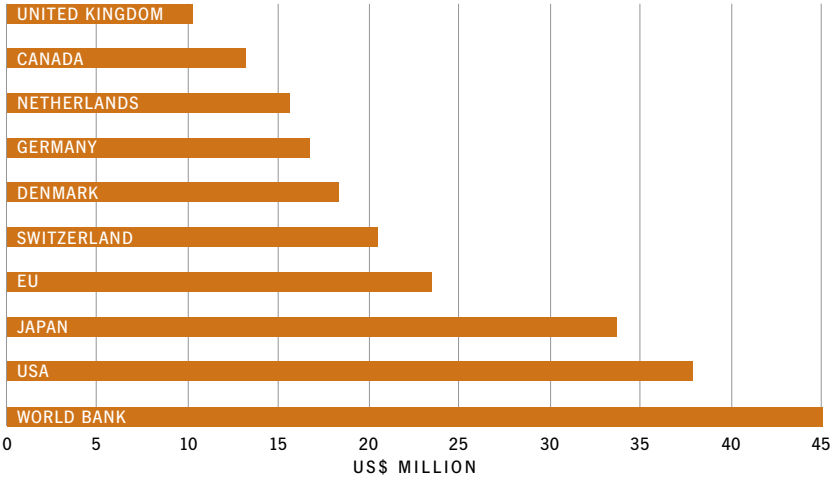
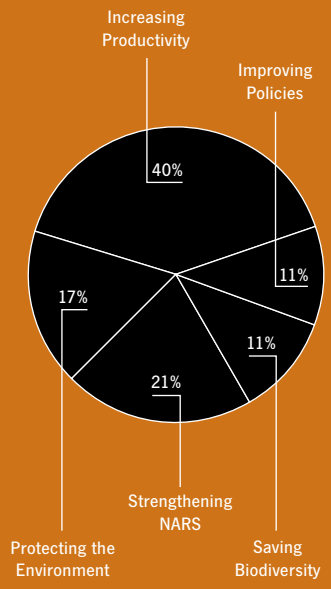


Figure 3. CGIAR Investments by Principal Undertaking, 1997



At the end of the third quarter only about half of the agenda commitments had been disbursed, compared to 65 percent in 1996. Contributions outstanding at the end of the year amounted to 7 percent.

Allocation of Agenda Support

The allocation of resources in support of the research agenda is reviewed below from four perspectives: by undertaking, by center, by object of expenditure, and by region.

Investments in Undertakings

Investments in the five principal CGIAR undertakings—increasing productivity, protecting the environment, saving biodiversity, improving policies, and strengthening NARS—for 1997 as compared to 1996 are shown in Figure 3. The overall distribution of resources does not indicate significant shifts from 1996. "Increasing productivity" continued as the primary thrust of CGIAR activities. In terms of production sectors, crops remain the primary focus, accounting for 72 percent of investments, followed by livestock at 14 percent, forestry at 11 percent, and fish at 3 percent.

Distribution of Center Support

Figure 4 illustrates the distribution of 1997 agenda support among the sixteen independent centers supported by the CGIAR.

Expenditure by Object The trend in reduced personnel spending of the past two years continued in 1997. Personnel costs amounted to 51 percent of the total in 1997, compared to 53 percent in 1995, and an average of 57 percent from 1992 to 1994. The personnel share decrease mainly results from two

Figure 4. Distribution of 1997 Agenda Support by Center

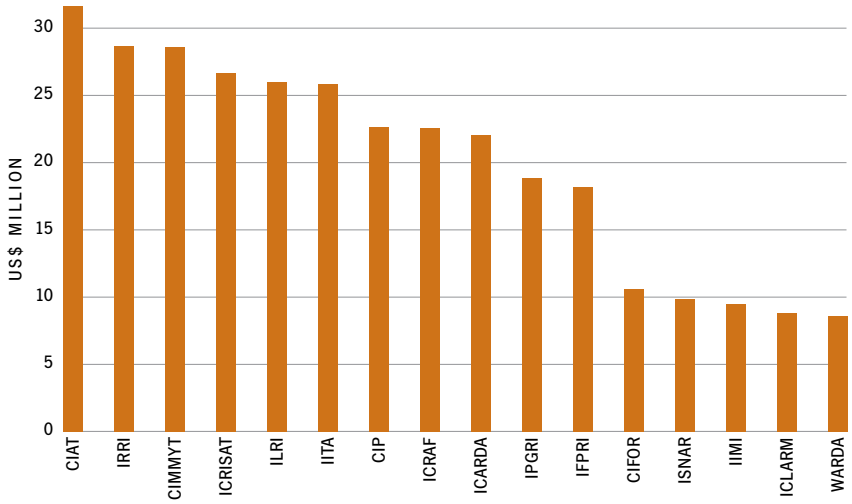
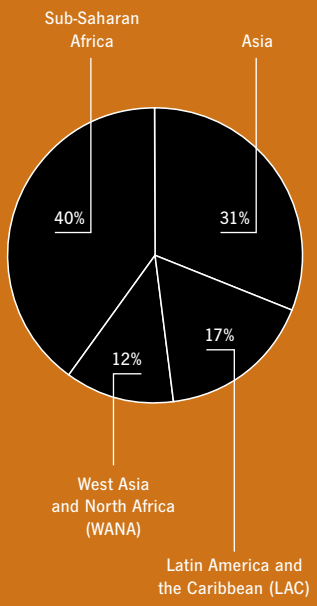


Figure 5. CGIAR Allocations by Developing Country, 1997



staff reduction programs at ICRISAT and IRRI, reflecting the need for fewer locally-recruited staff because of changes in research methods. The number of local staff in the CGIAR was about 8,000 at the end of 1997, compared to 9,400 in 1996. The internationally recruited staff stabilized at about 1,000 individuals.

Allocation by Region The 1997 resource allocation by region is shown in Figure 5. The 2 percent decrease for Asia is more modest than appears; part of the decline is due to the exceptional cost "bump" in 1996, caused by staff downsizing programs. Allocations targeted to Latin America and the Caribbean, and West Asia and North Africa, remained constant. Almost all centers had activities aimed at Sub-Saharan Africa in 1996, with four centers—IITA, ILRI, ICRAF, and ICRISAT—accounting for over two-thirds of allocations. The pattern was similar in Asia. A majority of the centers carried out activities in Asia and four centers—IRRI, ICRISAT, CIMMYT, and CIP—accounted for the majority of allocations. On the other hand, over two-thirds of the allocations for WANA continued to be made by ICARDA, while CIAT accounted for about half of the allocations made in Latin America and the Caribbean.

Table 1. CGIAR Research Agenda Financial Highlights, 1993–1997

(IN US$ MILLION AND PERCENT)

	1993	1994	1995	1996	1997
Member Contributions (in $ m)	235	268	270	304	320
Annual change (%)	5%	14%	1%	13%	5%
Composition of Membership Support (in $ m)					
DAC Countries					
Europe	81	100	107	132	141
Pacific Rim	37	41	39	43	40
North America	56	48	45	45	51
Developing Countries	2	3	5	8	11
Foundations	3	4	4	6	6
International and Regional Organizations	56	71	68	65	64
Non-CGIAR donors			1	5	7
Number of Contributing CGIAR Members	38	40	41	44	50
CGIAR Contributions as % ODA	0.42%	0.45%	0.46%	0.55%	0.55%
Composition of CGIAR Investments by Undertakings (%)					
Increasing Productivity	48%	46%	47%	40%	40%
Protecting the Environment	14%	15%	16%	16%	17%
Saving Biodiversity	6%	9%	10%	11%	11%
Improving Policies	10%	10%	9%	12%	11%
Strengthening NARS	22%	20%	18%	21%	21%
Center Operating Expenditure (in $ m)	254	265	286	325	332
Distribution by Object of Expenditure (%)					
Personnel	59%	56%	55%	53%	51%
Supplies/Services	28%	31%	31%	34%	36%
Travel	6%	6%	7%	7%	7%
Depreciation	7%	7%	7%	6%	6%
Allocation by Region (%)					
Sub-Saharan Africa	37%	39%	39%	38%	40%
Asia	34%	32%	32%	33%	31%
Latin America and the Caribbean (LAC)	15%	18%	17%	17%	17%
West Asia and North Africa (WANA)	13%	11%	12%	12%	12%

CGIAR Contributions to the Agreed Research Agenda by Center, 1972–1997[1]

(IN US$ MILLION)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
CIAT	4.3	6.1	5.5	6.0	6.3	9.5	11.7	13.4	15.0	16.2	18.6	21.7
CIFOR												
CIMMYT	5.0	6.3	6.1	7.6	8.7	10.1	12.7	14.9	16.6	18.4	18.3	17.5
CIP	0.5	1.3	2.2	2.7	4.1	5.6	5.4	7.1	7.7	9.0	9.6	10.1
ICARDA					1.5	4.6	7.5	10.1	11.8	13.1	15.0	19.7
ICLARM												
ICRAF												
ICRISAT	0.3	2.7	3.8	6.1	6.8	9.8	12.6	11.8	12.3	13.0	15.9	21.0
IFPRI				0.3	0.8	1.2	1.6	1.9	2.5	2.8	3.1	3.8
IIMI												
IITA	6.4	6.1	6.7	8.5	9.4	10.7	14.9	15.7	15.5	15.5	18.8	19.9
ILRI[2]			1.0	3.7	8.9	11.9	15.2	16.2	18.9	18.5	16.9	19.8
IPGRI[3]				0.5	0.9	1.3	1.7	2.4	3.0	3.0	3.6	3.6
IRRI	3.0	3.1	6.0	8.5	9.7	12.0	12.4	13.8	15.9	17.2	19.5	20.2
ISNAR									1.1	2.2	2.3	3.0
WARDA			0.5	0.6	0.8	1.3	1.9	1.8	2.5	2.0	2.2	2.8
Subtotal	**19.5**	**25.7**	**31.7**	**44.4**	**58.0**	**77.9**	**97.6**	**109.1**	**122.8**	**130.9**	**143.9**	**163.0**
Reserves/CGIAR Committees												1.7
Total	**19.5**	**25.7**	**31.7**	**44.4**	**58.0**	**77.9**	**97.6**	**109.1**	**122.8**	**130.9**	**143.9**	**164.7**

[1]Figures shown for 1972–1980 are total expenditures (operations/capital) and may be higher or lower than the contributions for that year (because of the accounting convention followed in the 1970s).

[2]Formerly ILCA and ILRAD.

[3]Formerly IBPGR and INIBAP.

1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
23.5	21.2	22.0	24.1	24.4	28.4	27.7	27.9	26.9	25.3	28.9	26.8	31.0	31.7	504.0
								3.2	5.1	5.8	7.7	8.7	10.6	41.1
20.7	19.4	21.3	23.3	25.9	27.9	27.1	26.6	26.1	23.1	27.2	26.4	27.4	28.6	493.2
9.7	10.2	13.3	12.8	17.8	18.6	16.9	17.1	15.3	14.7	18.8	19.9	22.7	22.6	295.8
21.0	17.8	18.0	18.3	17.3	18.4	18.7	19.5	17.9	16.2	18.3	18.7	21.1	22.0	346.6
								4.5	3.8	4.8	7.6	9.6	8.8	39.1
								11.1	11.2	15.5	16.2	17.4	21.8	93.1
21.0	20.3	25.0	26.2	26.0	30.1	31.5	29.4	27.3	26.0	27.6	26.0	27.4	26.9	486.9
4.3	4.4	4.9	6.0	8.7	8.8	9.1	8.9	8.3	8.1	9.3	9.7	16.0	18.2	142.4
								6.4	6.1	7.3	7.2	9.0	9.5	45.5
20.9	20.4	21.1	19.9	21.1	22.0	22.5	22.4	21.7	20.8	24.1	22.2	22.4	25.9	455.7
21.9	22.5	25.8	25.7	29.1	33.7	33.8	32.9	28.4	22.2	25.0	24.3	24.8	26.0	507.2
4.0	4.2	5.1	5.5	5.9	7.1	7.0	8.1	10.8	10.4	14.0	12.6	16.4	18.8	149.9
19.7	21.0	24.2	24.9	26.5	26.6	29.8	29.8	28.6	26.3	28.2	27.2	28.7	28.6	511.3
3.3	3.7	4.5	5.5	6.8	7.5	7.0	7.6	7.0	6.1	6.4	6.4	10.7	9.9	101.0
2.0	2.5	3.1	4.2	5.4	6.1	6.2	6.7	5.6	5.4	6.7	8.1	8.7	8.6	95.6
172.0	167.6	188.4	196.3	214.9	235.2	237.4	236.7	249.2	230.6	268.1	267.1	301.9	318.4	4308.3
1.0	2.6	3.8	5.3	-3.4	-10.7	-2.5	-4.7	-1.9	4.1		2.5	2.3	1.2	-14.2
173.0	170.2	192.2	201.6	211.5	224.5	234.9	232.0	247.3	234.7	268.1	269.6	304.1	319.6	4294.1

CGIAR Contributions to the Agreed Research Agenda, 1972–1997 (IN US$ MILLION)

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
INDUSTRIALIZED COUNTRIES												
Australia		0.0	1.0	1.2	1.7	1.8	2.6	2.7	3.0	3.3	3.8	4.1
Austria												
Belgium	0.1	0.6	0.4	0.6	1.7	2.3	2.7	3.1	3.3	2.4	1.9	1.9
Canada	1.2	1.8	4.7	4.3	5.4	6.8	7.4	7.5	6.9	7.5	8.3	9.9
Denmark	0.3	0.2	0.4	0.4	0.5	0.6	0.8	1.0	1.2	1.1	1.0	1.0
EU						2.5	2.2	3.8	4.5	4.3	4.7	5.2
Finland												
France			0.1	0.4	0.5	0.4	0.3	0.7	0.9	0.8	0.9	1.0
Germany		1.8	3.0	3.9	4.5	5.4	6.8	8.5	10.1	8.4	7.8	7.9
Ireland									0.2	0.2	0.2	0.3
Italy					0.1	0.0	0.1	0.1	0.7	1.0	1.6	6.1
Japan	0.1	0.2	0.3	0.7	1.2	2.5	3.5	4.8	7.0	8.1	8.9	9.1
Luxembourg												
Netherlands	0.4	0.4	0.6	1.2	1.5	1.7	1.8	2.4	2.6	3.0	3.2	3.6
New Zealand					0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	0.8	0.2	0.4	0.8	1.1	1.5	1.9	2.0	2.0	1.9	1.9	2.2
Portugal												
Romania												
Russian Federation												
Saudi Arabia					1.0	1.0						1.5
Spain										0.5	0.5	0.5
Sweden	1.0	0.2	1.5	2.3	2.3	2.2	2.7	3.1	3.4	3.3	3.2	3.1
Switzerland		0.4	0.1	0.5	0.9	1.2	1.4	1.9	2.5	2.6	2.8	4.9
United Kingdom	0.7	1.1	1.9	2.4	2.9	3.5	4.8	6.4	6.8	6.0	6.3	5.9
USA	3.8	5.4	6.8	10.8	14.9	18.1	21.1	24.8	29.0	35.0	40.8	44.6
Subtotal	8.2	12.3	21.2	29.6	40.2	51.6	60.0	72.8	84.0	89.4	97.6	112.7
DEVELOPING COUNTRIES												
Bangladesh												
Brazil												
China												
Colombia												
Côte d'Ivoire												
Egypt												
India										0.5	0.5	0.5
Indonesia												
Iran					2.0	2.0	1.0					
Kenya												
Korea												
Mexico									0.5	1.0	0.1	0.2
Nigeria				0.6	0.6	0.6	0.8	0.8	2.0	1.1	1.1	1.0
Pakistan												
Philippines									0.2	0.5	0.5	0.4
South Africa												
Thailand												
Subtotal				0.6	2.6	2.6	1.8	0.8	2.6	3.1	2.2	2.0
FOUNDATIONS												
Ford Foundation	5.3	3.7	3.0	2.8	2.0	1.6	1.0	1.0	1.3	1.3	0.8	1.3
Kellogg Foundation	0.2	0.3	0.3	0.3	0.3	0.3	0.3					0.6
Kresge Foundation[1]	0.8											
Leverhulme Trust[1]									0.5	0.6	0.7	0.8
Rockefeller Foundation	4.0	4.5	3.5	2.9	2.2	1.6	1.3	1.2	1.6	1.0	0.8	0.5
Sasakawa Foundation[1]												
Subtotal	10.2	8.5	6.8	6.0	4.5	3.5	2.6	2.2	3.4	2.9	2.3	3.2
INTERNATIONAL & REGIONAL ORGANIZATIONS												
ADB				0.3		0.5		0.7				
AFDB							0.0	0.0	0.0	0.0		
Arab Fund						0.3	0.3		0.3	0.2	0.2	0.2
FAO												
IDB			2.0	4.1	5.0	5.7	6.2	6.2	6.7	7.4	8.1	8.2
IDRC	0.2	0.3	0.6	1.0	1.8	1.3	1.0	0.8	1.5	1.0	1.2	1.8
IFAD								1.6	3.6	5.9	5.9	8.4
OPEC Fund									0.9	1.1	3.6	2.3
UNDP	0.9	1.0	1.5	2.2	1.9	3.5	4.4	4.0	4.6	5.2	6.2	6.9
UNEP				0.6	0.3	0.3		0.2			0.2	0.1
World Bank	1.3	2.8	2.4	3.2	6.5	7.9	8.7	10.2	12.0	14.6	16.3	19.0
Subtotal	2.3	4.1	6.5	11.4	15.6	19.5	20.6	23.6	29.6	35.5	41.8	46.8
Others[1]												
Total	20.7	25.0	34.5	47.5	62.9	77.2	85.0	99.5	119.6	130.9	143.8	164.7

[1]Non-CGIAR member.

1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
4.0	4.2	4.5	2.9	3.1	3.7	3.8	3.2	4.4	4.2	4.8	5.8	6.5	6.8	86.6
		1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.5	1.5	1.5	1.5	1.8	14.8
1.7	2.0	1.8	2.7	2.5	2.5	3.2	3.3	3.3	2.5	3.6	4.9	5.6	5.7	66.3
10.0	9.7	10.7	11.8	13.8	14.4	15.4	15.7	17.6	15.8	15.3	12.7	13.9	12.9	261.2
1.2	1.1	1.7	2.3	2.5	2.6	3.6	3.4	4.9	4.8	7.3	10.0	18.0	19.1	90.8
4.7	6.6	7.1	9.1	9.2	11.8	15.4	13.5	13.3	12.1	14.7	16.7	19.7	23.1	204.4
0.5	0.6	1.0	2.3	2.7	5.2	5.3	5.9	1.0	0.2	0.5	1.0	1.1	2.1	29.5
0.9	1.2	2.1	3.2	3.3	3.6	4.1	4.1	4.9	3.2	3.9	4.7	4.7	4.9	54.9
6.7	6.2	8.0	10.4	10.8	11.2	11.2	11.0	13.7	13.3	16.6	15.8	16.8	16.9	236.6
0.4	0.4	0.6	0.7	0.2	0.3	0.3	0.3	0.3	0.7	0.8	0.7	0.7	0.8	7.9
6.6	6.5	8.3	10.1	8.1	9.5	6.1	6.1	5.8	3.9	2.8	2.7	2.3	4.0	92.5
9.7	11.1	15.9	18.0	20.2	19.9	23.2	23.7	26.9	32.6	36.4	33.9	36.4	33.6	387.8
							0.3		0.1	0.2	0.3	0.4	0.7	2.0
3.3	3.8	6.7	5.6	6.3	5.5	6.9	6.5	7.6	8.3	11.5	12.8	15.6	14.5	137.3
0.0	0.0	0.0												0.3
1.9	2.3	3.1	3.2	3.9	4.1	4.7	4.7	5.8	4.7	5.4	6.1	6.3	7.2	80.1
													0.3	0.3
										0.2				0.2
1.5														5.0
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.8	1.2	1.8	11.2
3.1	3.0	4.2	4.9	5.4	5.5	6.2	6.1	8.6	6.2	8.4	7.3	8.4	7.1	112.6
6.7	5.2	7.1	7.7	9.6	9.5	9.4	10.2	10.6	9.2	12.9	11.9	19.0	20.8	168.7
5.7	6.3	8.4	10.3	11.5	10.9	11.6	11.6	11.1	9.4	9.8	9.9	10.7	10.0	185.8
45.3	45.2	46.3	40.2	42.2	44.1	45.1	45.6	48.1	40.5	32.3	32.1	30.5	37.8	830.3
114.4	115.8	138.9	146.9	156.8	165.7	176.8	176.5	189.7	173.8	189.5	191.5	219.6	231.7	3067.2
													0.1	0.1
1.0				0.0	0.1	0.0	0.1					0.0	0.5	1.7
0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	6.0
										1.2	1.1	2.1	2.6	7.1
												0.3	0.2	0.5
											0.5	0.5	1.1	2.1
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.3	1.3	0.8	10.3
									0.5	0.1	0.1	0.5	0.5	1.7
											0.5	1.4	1.5	8.4
							0.5	0.5	0.5	0.5	0.5	0.6	0.6	3.7
1.2	0.4	0.2	0.1				0.1	0.0	0.0		0.3	0.2	0.5	4.8
1.0	0.9	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.0				0.1	11.4
													0.5	0.5
0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.7	0.4	5.5
													0.5	0.5
													0.5	0.5
4.5	2.4	1.6	1.3	1.2	1.0	1.1	1.8	1.8	2.3	3.1	5.0	8.2	10.8	64.6
1.0	0.9	0.9	0.9	0.8	0.8	0.9	1.2	1.8	2.3	3.1	2.5	3.3	3.2	48.6
0.3												0.4	0.3	3.6
														0.8
0.8	0.6	0.6										0.1	0.0	4.6
0.5	0.8	0.9	0.9	0.9	1.9	1.7	0.9	1.5	0.9	1.3	1.7	2.4	2.2	43.5
										0.3			0.1	0.4
2.6	2.3	2.5	1.8	1.7	2.7	2.7	2.1	3.2	3.1	4.8	4.2	6.1	5.9	101.5
					0.0	0.6	0.3	0.8	0.2	0.6	1.0	1.4	1.8	8.3
	0.0	0.6	0.7	0.7	1.1	1.2	1.6	0.2	1.1	1.5	1.1	1.7	1.0	12.7
0.2	0.3	0.3	0.4	0.4	0.5		0.6	0.6	0.7	1.3	1.2	1.3	1.0	10.5
													0.3	0.3
8.7	8.2	8.4	10.3	10.5	11.1	10.5	6.3	5.1	5.1	6.2	3.8	5.7	4.6	165.1
1.0	1.3	1.2	0.8	0.6	0.6	0.8	0.5	0.9	0.5	1.1	0.8	1.2	2.6	26.5
7.0	3.2	0.5	0.3	0.3	0.5	0.5	0.4	0.4	0.6	0.4	1.0	1.9	3.1	45.2
2.2	1.0	0.5	0.5	0.3	0.3		0.1	0.1	0.1	0.2	0.2	0.2	0.2	13.7
8.1	7.5	8.4	8.7	9.0	7.5	6.3	6.6	6.9	7.3	9.5	8.4	6.5	4.5	147.3
0.0				0.1	0.0		0.0		0.0	0.2	0.7	0.3	0.2	3.3
24.3	28.1	28.4	30.0	30.0	33.3	34.3	35.1	37.6	40.0	50.0	50.0	44.9	45.0	615.8
51.6	49.6	49.2	51.8	51.8	55.1	54.3	51.6	52.6	55.6	70.9	68.2	65.0	64.3	1048.7
											0.7	5.2	7.0	12.9
173.2	176.1	192.2	201.6	211.5	224.5	234.9	232.0	247.3	234.7	288.1	269.6	304.1	319.6	4294.9

The Centers

International Center for Tropical Agriculture (CIAT)

Web: http://www.ciat.cgiar.org
Headquarters: Cali, Colombia
Director General: Grant Scobie
Board Chair: Robert Havener
Founded: 1967
Joined the CGIAR: 1971
Regional Offices: Cruz das Almas, Brazil; Quito, Ecuador; Guatemala City, Guatemala; Tegucigalpa, Honduras; Lilongwe, Malawi; Managua, Nicaragua; Manila, Philippines; Arusha, Tanzania; Bangkok, Thailand; Kampala, Uganda
Focus: To alleviate hunger and poverty in tropical countries by applying science to the generation of technology that will lead to lasting increases in agricultural output while preserving the natural resource base. Research focuses on the development of germplasm for beans, cassava, tropical forages, and rice for Latin America and on improving resource management in humid agroecosystem areas in tropical America, such as hillsides, forest margins, and savannas.

Center for International Forestry Research (CIFOR)

Web: http://www.cgiar.org/cifor
Headquarters: Jakarta, Indonesia
Director General: Jeffrey Sayer
Board Chair: Bo Bengtsson (until February 28, 1997); Gill Shepherd (from March 1, 1997)
Founded: 1992
Joined the CGIAR: 1992
Focus: To contribute to the sustained well-being of people in developing countries, particularly in the tropics, through collaborative strategic and applied research in forest systems and forestry, and by promoting the transfer of appropriate new technologies and the adoption of new methods of social organization for national development.

International Center for the Improvement of Maize and Wheat (CIMMYT)

Web: http://www.cgiar.org/cimmyt
Headquarters: Mexico City, Mexico
Director General: Timothy Reeves
Board Chair: Wally Falcon
Founded: 1966
Joined the CGIAR: 1971
Regional Offices: Dhaka, Bangladesh; Santa Cruz, Bolivia; Cali, Colombia; San José, Costa Rica; Addis Ababa, Ethiopia; Guatemala City, Guatemala; Tegucigalpa, Honduras; Nairobi, Kenya; Kathmandu, Nepal; Aleppo, Syrian Arab Republic; Bangkok, Thailand; Ankara, Turkey; Montevideo, Uruguay; Harare, Zimbabwe
Focus: To help the poor through agricultural research and in concert with national research systems, by increasing the productivity of resources committed to maize and wheat in developing countries, while protecting the environment.

International Potato Center (CIP)

Web: http://www.cgiar.org/cip

Headquarters: Lima, Peru

Director General: Hubert Zandstra

Board Chair: Martha ter Kuile (until May 31, 1997); Adrian Fajardo-Christen (acting chair from September 1, 1997 to February 28, 1998); David MacKenzie (from March 1, 1998)

Founded: 1971

Joined the CGIAR: 1973

Regional Offices: Cochabamba, Bolivia; Quito, Ecuador; Nairobi, Kenya; Bamenda, Cameroon; Kampala, Uganda; Ibadan, Nigeria; Kafr El Zayat, Egypt; New Delhi, India; Bogor and Bandung, Indonesia; Manila, Philippines; Beijing, China

Focus: To contribute to increased food production, the generation of sustainable and environmentally sensitive agricultural systems, and improved human welfare by conducting coordinated, multidisciplinary research programs on the potato and sweet potato. In pursuit of this goal, CIP conducts worldwide collaborative research and training to catalyze collaboration among countries in solving common problems and help scientists worldwide successfully address changing demands in agriculture.

International Center for Agricultural Research In the Dry Areas (ICARDA)

Web: http://www.cgiar.org/icarda

Headquarters: Aleppo, Syrian Arab Republic

Director General: Adel El-Beltagy

Board Chair: Alfred Bronnimann

Founded: 1977

Joined the CGIAR: 1978

Regional Offices: Damascus, Syrian Arab Republic; Beirut, Lebanon; Cairo, Egypt; Tunis, Tunisia; Rabat, Morocco; Amman, Jordan; Ankara, Turkey; Tehran, Iran; Dubai, United Arab Emirates; Dhamar, Republic of Yemen; Mexico City, Mexico

Focus: To meet the challenges posed by harsh and variable environments by increasing the productivity of winter rainfed agricultural systems to higher sustainable levels, by arresting and reversing soil degradation, by improving water use efficiency, and ensuring the quality of the fragile environmental resources. ICARDA has a worldwide responsibility for the improvement of barley, lentils, and faba bean, and a regional responsibility in West Asia and North Africa for the improvement of wheat, chickpea, forages, and pasture. ICARDA emphasizes rangeland improvement, small ruminant management and nutrition, and rainfed farming systems associated with these crops.

International Center for Living Aquatic Resources Management (ICLARM)

Web: http://www.cgiar.org/iclarm

Headquarters: Makati City, The Philippines

Director General: Meryl Williams

Board Chair: John Dillon (until January 25, 1997); Kurt Peters (from January 26, 1997)

Founded: 1977

Joined the CGIAR: 1992

Regional Offices: Honiara, Solomon Islands; Dhaka, Bangladesh; Zomba, Malawi; Tortola, British Virgin Islands; Giza, Egypt

Focus: To improve the production and management of aquatic resources, for sustainable benefits to present and future generations of low-income producers and consumers in developing countries through international multidisciplinary research in partnership with national agricultural research systems. The declining state and threatened sustainability of fisheries, resulting from overfishing, poverty, pollution, and the potential for increases in aquaculture production, call for research that explores the dynamics of coastal and coral reef resource systems and integrated agriculture-aquaculture systems, investigating alternative management schemes in these systems and improving the productivity of key species.

International Centre for Research in Agroforestry (ICRAF)

Web: http://www.cgiar.org/icraf
Headquarters: Nairobi, Kenya
Director General: Pedro Sanchez
Board Chair: David Thorud (until April 11, 1997); Yemi Katerere (from April 12, 1997)
Founded: 1977
Joined the CGIAR: 1991
Regional Offices: Machakos, Kenya; Yaoundé, Cameroon; Bogor, Indonesia; Embu, Kenya; Zomba, Malawi; Bamako, Mali; Quintana Roo, Mexico; Niamey, Niger; Pucallpa, Peru; Laguna, Philippines; Shinyanga, Tanzania; Chiang Mai, Thailand; Kampala, Uganda; Chipata, Zambia; Harare, Zimbabwe
Focus: To mitigate tropical deforestation, land depletion, and rural poverty through improved agroforestry systems. Trees in farming systems can increase and diversify farmer income, make farming systems more robust, reverse land degradation, and reduce the pressure on natural forests. Working together with national agricultural and forestry research systems, nongovernmental organizations, and other research partners, ICRAF carries out research and focuses on finding alternatives to slash-and-burn agriculture in the humid tropics and overcoming land depletion in subhumid and semi-arid Africa.

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)

Web: http://www.cgiar.org/icrisat
Headquarters: Patancheru, Andhra Pradesh, India
Director General: James Ryan (until August 31st, 1997); Shawki Barghouti (from September 1, 1997)
Board Chair: Hans-Jürgen von Maydell (until February 28, 1997); R. S. Paroda (from March 1, 1997 until January 31, 1998); Ragnhild Sohlberg (From February 1, 1998)
Founded: 1972
Joined the CGIAR: 1972
Regional Offices: Niamey, Niger; Bamako, Mali; Kano, Nigeria; Bulawayo, Zimbabwe; Nairobi, Kenya; Lilongwe, Malawi, New Delhi, India
Focus: To conduct research leading to enhanced sustainable food production in the harsh conditions of the semi-arid tropics. ICRISAT's main crops—sorghum, finger millet, pearl millet, chickpea, pigeonpea, and groundnut—are vital to life for the one-sixth of the world's population that lives in the semi-arid tropics. ICRISAT conducts research in partnership with the national agricultural systems that encompasses the management of the region's limited natural resources to increase the productivity, stability, and sustainability of these and other crops.

International Food Policy Research Institute (IFPRI)

Web: http://www.cgiar.org/ifpri
Headquarters: Washington, DC, United States of America
Director General: Per Pinstrup-Andersen
Board Chair: David Bell (until March 31, 1997); Martin Piñeiro (from April 1, 1997)
Founded: 1975
Joined the CGIAR: 1980
Focus: To identify and analyze alternative national and international strategies and policies for meeting the food needs of the developing world on a sustainable basis, with particular emphasis on low-income countries and on the poorer groups in those countries. While IFPRI's research is specifically geared to contributing to the reduction of hunger and malnutrition, the factors involved are many and wide-ranging, requiring analysis of underlying processes and extending beyond a narrowly defined food sector. IFPRI collaborates with governments and private and public institutions worldwide and disseminates its research to policymakers, administrators, policy analysts, researchers, and others concerned with national and international food and agricultural policy.

International Irrigation Management Institute (IIMI)

Web: http://www.cgiar.org/iimi
Headquarters: Colombo, Sri Lanka
Director General: David Seckler
Board Chair: Zafar Altaf
Founded: 1984
Joined the CGIAR: 1991
Regional Offices: Battarmulla, Sri Lanka; Ouagadougou, Burkina Faso; Mexico City, Mexico; Niamey, Niger; Lahore, Pakistan; Izmir, Turkey
Focus: To foster improvement in the management of water resource systems and irrigated agriculture. IIMI conducts a worldwide program to generate knowledge to improve water resource systems and irrigation management, strengthen national research capacity, and support the introduction of improved technologies, policies, and management approaches.

International Institute of Tropical Agriculture (IITA)

Web: http://www.cgiar.org/iita
Headquarters: Ibadan, Nigeria
Director General: Lukas Brader
Board Chair: Pierre Dubreuil (until May 2, 1997); Enrico Porceddu (from May 3, 1997)
Founded: 1967
Joined the CGIAR: 1971
Regional Offices: Kano and Port Harcourt, Nigeria; Cotonou, Republique du Benin; Yaoundé, Cameroon; Kumasi, Ghana; Bouaké, Côte d'Ivoire; Kampala, Uganda; Lilongwe, Malawi; Maputo, Mozambique; Manza, Zambia; Dar-Es-Salaam, Tanzania; Marondera, Zimbabwe
Focus: To help those countries increase food production on an ecologically sustainable basis by conducting research and outreach activities with partner programs in the countries of Sub-Saharan Africa. IITA seeks to improve the food quality, plant health, and postharvest processing of cassava, maize, cowpea, soybean, yam, and banana and plantain and strengthen national research capabilities.

International Livestock Research Institute (ILRI)

Web: http://www.cgiar.org/ilri
Headquarters: Nairobi, Kenya
Director General: Hank Fitzhugh
Board Chair: Neville Clark
Founded: 1995
Joined the CGIAR: 1995
Regional Offices: Addis Ababa, Ethiopia; Ibadan, Nigeria; Lima, Peru; Cali, Colombia; Niamey, Niger; Andhra Pradesh, India; Bobo-Dioulasso, Burkina Faso

Focus: To increase animal health, nutrition, and productivity and protect environments supporting animal production by tailoring production systems and developing technologies that are sustainable over the long term. ILRI works to characterize and conserve the genetic diversity of indigenous tropical forage species and livestock breeds and promote equitable and sustainable national policies for animal agriculture and related natural resource management.

International Plant Genetic Resources Institute (IPGRI)

Web: http://www.cgiar.org/ipgri
Headquarters: Rome, Italy
Director General: Geoffrey Hawtin
Board Chair: Wanda Collins (until October 31, 1997); Marcio de Miranda Santos (from November 1, 1997)
Founded: 1974
Joined the CGIAR: 1974
Regional Offices: Nairobi, Kenya; Serdang, Malaysia; Beijing, China: New Delhi, India: Aleppo, Syria; Cali, Colombia; Cotonou, Republique du Benin
IPGRI/INIBAP Offices: Montpellier, France; Heverlee, Belgium; Douala, Cameroon; Kampala, Uganda; Los Baños, Philippines; Turrialba, Costa Rica; San Pedro Sula, Honduras
Focus: To encourage, support, and engage in activities to strengthen the conservation and use of plant genetic resources worldwide, with special emphasis on developing countries, by providing scientific and technical information, research, and training.

International Rice Research Institute (IRRI)

Web: http://www.cgiar.org/irri
Headquarters: Manila, The Philippines
Director General: George Rothschild (until December 1, 1997); Robert Havener (Interim Director General from January 20, 1998)
Board Chair: Roelof Rabbinge
Founded: 1960
Joined the CGIAR: 1971
Regional Offices: Dhaka, Bangladesh; Yangon, Myanmar; New Delhi, India; Bogor, Indonesia; Bangkok, Thailand; Ibaraki, Japan; Antananarivo, Madagascar; Vientiane, Lao PDR; Phnom Penh, Cambodia; Hanoi, Vietnam
Focus: To improve the well-being of present and future generations of rice farmers and consumers, particularly those with low incomes, by generating and disseminating rice-related knowledge and technology of short- and long-term environmental, social, and economic benefit and by helping to enhance national rice research.

International Service for National Agricultural Research (ISNAR)

Web: http://www.cgiar.org/isnar
Headquarters: The Hague, The Netherlands
Director General: Christian Bonte-Friedheim (until February 23, 1997); Stein Bie (from March 10, 1997)
Board Chair: Amir Muhammed
Founded: 1979
Joined the CGIAR: 1980
Focus: To help developing countries bring about sustained improvements in the performance of their national agricultural research systems and organizations by supporting institutional development, promoting appropriate policies and funding for agricultural research, developing or adapting improved research management techniques, and generating and disseminating relevant knowledge and information.

West Africa Rice Development Association (WARDA)

Web: http://www.cgiar.org/warda
Headquarters: Bouaké, Côte d'Ivoire
Director General: Kanayo Nwanze
Board Chair: Just Faaland
Founded: 1970
Joined the CGIAR: 1975
Regional Offices: Abidjan, Côte d'Ivoire; St. Louis, Senegal; Ibadan, Nigeria
Focus: To strengthen the capability of agricultural scientists in West Africa to generate technology for the sustainable productivity of intensified rice-based cropping systems to improve the well-being of poor farm families and conserve and enhance the natural resource base. Research focuses on rice grown in mangrove swamps, inland valleys, upland conditions, and irrigated conditions.

Who's Who in the CGIAR (Names listed are as of date of publication.)

CGIAR Members

Countries

Australia, Austria, Bangladesh, Belgium, Brazil, Canada, China, Colombia, Côte d'Ivoire, Denmark, Egypt, Finland, France, Germany, India, Indonesia, Iran, Ireland, Italy, Japan, Kenya, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Peru, Philippines, Portugal, Romania, Russian Federation, South Africa, Spain, Sweden, Switzerland, Syria, Thailand, United Kingdom, United States of America

Foundations

Ford Foundation, Kellogg Foundation, Rockefeller Foundation

International and Regional Organizations

African Development Bank, Arab Fund for Economic and Social Development, Asian Development Bank, European Commission, Food and Agriculture Organization of the United Nations, Inter-American Development Bank, International Development Research Centre, International Fund for Agricultural Development, Opec Fund for International Development, United Nations Development Programme, United Nations Environment Programme, World Bank

CGIAR Regional Representatives[1]

Burkina Faso and Zimbabwe
Malaysia and Nepal
Estonia and Slovenia
Nicaragua and Paraguay
Egypt and Syria

The CGIAR

CGIAR Chairman

Ismail Serageldin,[2] *Vice President,* Special Programs, The World Bank

CGIAR Executive Secretary

Alexander von der Osten

Cosponsors and Their Representatives[3]

Food and Agriculture Organization of the United Nations, Henri Carsalade

United Nations Development Programme, Roberto Lenton

United Nations Environment Programme, Jorge E. Illueca

The World Bank, Michel Petit

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Jacques Faye
Elias Fereres
Richard R. Harwood
Alain de Janvry
Keiji Kainuma
Justin Y. Lin
Magdy A. Madkour
Maria Antonia Fernandez Martinez
Cyrus G. Ndiritu
Lucia de Vaccaro
Usha Barwale Zehr

[1] El Salvador departed as a Regional Representative.
[2] In March, 1998, Ismail Serageldin assumed the position of Vice President, Special Programs. His previous position was Vice President, Environmentally and Socially Sustainable Development.
[3] Franklin G. Cardy departed as the representative for the United Nations Environment Programme.
[4] Anton Reithinger (European Commission) and Kunio Nakamura (Japan) departed the Finance Committee.
[5] E. F. (Ted) Henzell, C.H. Hanumantha Rao, Sir Ralph Riley, Peter Magnus A. Tigerstedt, and Maria José de O. Zimmermann departed TAC.

Impact Assessment Evaluation Group (IAEG)[6]

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Frans L. Leeuw
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John M. Preston
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CGIAR 1991–1997

CGIAR Chairmen, 1971–1997

Ismail Serageldin, 1994–
V. Rajagopalan, 1991–1993
Wilfried Thalwitz, 1990–1991
W. David Hopper, 1987–1990
S. Shahid Husain, 1984–1987
Warren Baum, 1974–1983
Richard H. Demuth, 1971–1974

CGIAR Executive Secretaries, 1972–1997

Alexander von der Osten, 1989–
Curtis Farrar, 1982–1989
Michael Lejeune, 1975–1982
Harold Graves, 1972–1975

TAC Chairs, 1971–1997

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Alex McCalla, 1988–1994
Guy Camus, 1982–1987
Ralph Cummings, 1977–1982
Sir John Crawford, 1971–1976

TAC Executive Secretaries, 1971–1997

Shellemiah Keya, 1996–
Guido Gryseels,[8] 1995–1996
John Monyo, 1985–1994
Alexander von der Osten, 1982–1985
Philippe Mahler, 1976–1982
Peter Oram, 1971–1976

[6] Eugenia Muchnik de Rubinstein departed IAEG.
[7] Andreas Buchting and Mohamad Hasan departed the Private Sector Committee.
[8] Officer-in-Charge

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